

**FACT SHEET FOR NPDES PERMIT WA0023728
NASELLE YOUTH CAMP**

This fact sheet is a companion document to the draft National Discharge Pollutant Elimination System (NPDES) Permit No. WA0023728. The Department of Ecology (Ecology) is proposing to issue this permit, which will allow discharge of treated municipal wastewater to waters of the state of Washington.

This fact sheet explains the nature of the proposed discharge, Ecology's decisions on limiting the pollutants in the wastewater, and the regulatory and technical basis for those decisions.

GENERAL INFORMATION	
Applicant	State of Washington Department of Social and Health Services Olympia, Washington 98504-0095
Facility Name and Address	Naselle Youth Camp HCR 78 Box 200 Naselle, Washington 98638
Type of Treatment:	Activated Sludge -- Batch Reactor
Discharge Location	Naselle River at mile 9.0 Latitude: 46° 23' 20" N Longitude: 123° 49' 45" W.
Water Body ID Number	WA-24-3010

TABLE OF CONTENTS

INTRODUCTION	3
BACKGROUND INFORMATION.....	3
DESCRIPTION OF THE FACILITY.....	3
History	1
Collection System Status	3
Discharge Outfall.....	4
Residual Solids	4
PERMIT STATUS.....	5
WASTEWATER CHARACTERIZATION	5
PROPOSED PERMIT LIMITATIONS AND CONDITIONS.....	5
DESIGN CRITERIA	5
TECHNOLOGY-BASED EFFLUENT LIMITATIONS	6
SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS.....	7
Numerical Criteria for the Protection of Aquatic Life.....	7
Numerical Criteria for the Protection of Human Health.....	7
Narrative Criteria	7
Antidegradation	7
Critical Conditions.....	8
Mixing Zones.....	8
Description of the Receiving Water.....	8
Surface Water Quality Criteria	9
Consideration of Surface Water Quality-Based Limits for Numeric Criteria.....	9
Whole Effluent Toxicity	11
Human Health	11
Sediment Quality	11
MONITORING AND REPORTING.....	12
OTHER PERMIT CONDITIONS	12
PREVENTION OF FACILITY OVERLOADING	12
OPERATION AND MAINTENANCE (O&M).....	12
RESIDUAL SOLIDS HANDLING.....	13
OUTFALL EVALUATION	13
GENERAL CONDITIONS.....	13
PERMIT ISSUANCE PROCEDURES	13
PERMIT MODIFICATIONS	13
RECOMMENDATION FOR PERMIT ISSUANCE	13
REVIEW BY THE PERMITTEE.....	13
REFERENCES FOR TEXT AND APPENDICES.....	14
APPENDICES	17
APPENDIX A--PUBLIC INVOLVEMENT INFORMATION	Error! Bookmark not defined.
APPENDIX B--GLOSSARY	15
APPENDIX C--TECHNICAL CALCULATIONS	17
APPENDIX D--RESPONSE TO COMMENTS	19

INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the NPDES permits, which is administered by the United States Environmental Protection Agency (U.S. EPA). The U.S. EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 Revised Code of Washington (RCW) which defines Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits [Chapter 173-220 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least 30 days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

This fact sheet has been reviewed by the Permittee and errors in fact have been corrected. After the public comment period has closed, Ecology will summarize the substantive comments and the response to each comment. The summary and response to comments (Appendix D) will become part of the file on the permit and parties submitting comments will receive a copy of Ecology's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments.

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

History

The Washington State Department of Social and Health Services (DSHS) operates the Naselle Youth Camp (Camp). This facility provides housing for juvenile offenders of the law committed to DSHS by the state court system. The Camp formerly belonged to the United States Air Force.

The original wastewater collection system was constructed during the 1950s. However, the original wastewater treatment plant (WWTP) was apparently constructed in 1975. The WWTP, a package plant, was manufactured by Clow Corporation. The main components of this treatment system consisted of an aeration basin, clarifier, and chlorine contact tank. It was designed to treat domestic wastewater at an average flow of 35,000 gallons per day. Waste activated sludge was stored in an adjacent tank but was rarely removed during the past 20 years of operation.

Collection System Status

The original collection system was constructed during the 1950s when the site was operated as a U.S. Air Force facility. The collection system has been gradually expanded to serve new structures. Presently, the collection system consists of 3400 feet of 8-inch diameter gravity pipe and approximately 20, 4-inch and 6-inch diameter sidesewers that connect the buildings to the main lines.

Flow data indicate the collection system allows large volumes of infiltration and inflow (I/I) to enter the system. During wet weather, conditions the average day flow increased by 175 percent over the average day dry weather flow.

In 1983 and 1987, the Camp performed collection system rehabilitation projects. In 1983, pipe joints were grouted, 400 feet of pipe was lined and manholes were replaced or repaired. In the 1987 project, the Camp replaced, repaired, or plugged 14 sidesewers and replaced 130 feet of sewer main.

An engineering report for the Camp's wastewater collection and treatment system, by Gibbs and Olson, Inc., recommends replacing 2850 feet of the collection system's main lines and replacing four side sewers. The main line replacement includes all the pipes in the system except for the section that was lined in 1983 and for one segment that was replaced in 1987.

This construction will also include placement of a grease trap on the kitchen piping. To serve new housing facilities, the Camp is anticipating to construct 350 feet of 8-inch diameter gravity pipe, and 2000 feet of 6-inch diameter side sewer pipe.

Treatment Process

The engineering report recommended replacing the existing WWTP with a new treatment system. The new WWTP will consist of an equalization basin followed by a single batch reactor. The batch reactor will combine the processes of activated sludge treatment and clarification. An ultraviolet light system will provide disinfection. The original WWTP will be converted to an aerobic digester and sludge holding unit.

Discharge Outfall

The original outfall pipe for the WWTP discharges to the Naselle River through a 6-inch diameter pipe. The terminus is exposed during low tidal conditions.

Because of compromised structural integrity, the entire outfall will be replaced with a new 6-inch diameter line. The new outfall will include a 4-inch diameter discharge nozzle located at a depth of 8 feet below mean, lower, low water.

Residual Solids

The WWTP will remove solid material at the headwork's bar screen. Material removed by the bar screen will be drained and disposed of as solid waste in a landfill.

FACT SHEET FOR NPDES PERMIT WA0023728

Waste activated sludge will receive aerobic treatment and storage in the converted WWTP. The engineering report recommends removal by a contract hauler. The Camp may evaluate the use of biosolids on forest land.

PERMIT STATUS

The previous permit for this facility was issued on January 5, 1981. The previous permit placed effluent limitations on five-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), pH, and fecal coliform bacteria.

DSHS submitted an NPDES permit application for the new wastewater treatment plant during July 1996. Ecology accepted the application as complete during October 1996.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application. Based on the design of the WWTP, the effluent is characterized as follows:

Table 1: Wastewater Characterization

Parameter	Value
Annual Average Flow	0.035 MGD
BOD ₅	30 mg/L
TSS	30 mg/L
Fecal Coliform Bacteria	200 colonies/100 mL
pH	6.1 to 7.1 standard units

MGD = million gallons per day

mg/L = milligrams per liter

mL = milliliter

PROPOSED PERMIT LIMITATIONS AND CONDITIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation [40 Code of Federal Regulations (CFR) 133, and Chapters 173-220 and 173-221 WAC]. Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), or Sediment Quality Standards (Chapter 173-204 WAC). The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

DESIGN CRITERIA

In accordance with WAC 173-220-130(1)(a), effluent limitations shall not be less stringent than those based upon the design criteria for the facility, which are contained in approved engineering plans, reports, or approved revisions. Also, in accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from the approved engineering report prepared by Gibbs & Olson, Inc., and are as follows:

Table 2: Design Criteria for the Naselle Youth Camp WWTP

Parameter	Design Criteria
Monthly average dry weather flow	0.035 MGD
Peak flow	0.0877 MGD
BOD ₅ influent loading	77 lb/d
TSS influent loading	70 lb/d
Design population equivalent	328

lb/d = pounds per day

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Technology-based effluent limits for municipal wastewater treatment plant discharges have been promulgated by federal and state regulations. These effluent limitations are given in the 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, BOD₅, and TSS are taken from Chapter 173-221 WAC and 40 CFR 133. Only the state regulation, WAC 173-221, contains a minimum level of effluent quality required for fecal coliform bacteria.

Table 3: Technology-based Limits.

Parameter	Limit
pH	shall be within the range of 6 to 9 standard units
Fecal Coliform Bacteria	Monthly Geometric Mean shall not exceed 200 colonies/100 mL Weekly Geometric Mean shall not exceed 400 colonies/100 mL
BOD ₅	Average Monthly Concentration shall not exceed 30 mg/L and shall not exceed 15 percent of the average influent concentration Average Weekly Concentration shall not exceed 45 mg/L
TSS	Average Monthly Concentration shall not exceed 30 mg/L and shall not exceed 15 percent of the average influent concentration Average Weekly Concentration shall not exceed 45 mg/L

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b):

1. **BOD₅** -- the monthly average effluent mass loadings are determined by multiplying the monthly influent design loading by the percent removal requirement $[(77 \text{ lb/day}) \times (0.15) = 11.6 \text{ lb/day}]$. The weekly average effluent mass loading is calculated as $1.5 \times \text{monthly loading} = 17.4 \text{ lb/day}$.

2. **TSS** -- the monthly average effluent mass loadings are determined by multiplying the monthly influent design loading by the percent removal requirement $[(70 \text{ lb/day}) \times (0.15) = 10.5 \text{ lb/day}]$. The weekly average effluent mass loading is calculated as $1.5 \times \text{monthly loading} = 15.8 \text{ lb/day}$.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

To protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is intended to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

Numerical Criteria for the Protection of Aquatic Life

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). These criteria identify maximum concentrations of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. If surface water quality-based limitations are more stringent or potentially more stringent than technology-based limitations, then the water quality-based limitations must be used in a permit.

Numerical Criteria for the Protection of Human Health

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

Narrative Criteria

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

Antidegradation

The state of Washington's Antidegradation Policy, WAC 173-201A-070, requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the

FACT SHEET FOR NPDES PERMIT WA0023728

natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria.

Critical Conditions

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

Mixing Zones

The Water Quality Standards allow Ecology to authorize mixing zones around a discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention and control (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

Description of the Receiving Water

The facility discharges to the Naselle River which is designated as a Class A receiving water in the vicinity of the outfall. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce; and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

Surface Water Quality Criteria

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Ecology's *Permit Writer's Manual* suggests, when the volume weighted salinity is between 1 and 10 parts per thousand, application of the most protective criteria of either fresh or marine water. Criteria for this discharge are summarized in the following table:

Table 4: Water Quality Criteria

Parameter	Freshwater Criterion	Marine Water Criterion	Applicable Criterion
Fecal Coliform Bacteria	100 colonies/100 mL maximum geometric mean	14 Colonies/100 mL maximum geometric mean	14 Colonies/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum	6 mg/L minimum	8 mg/L minimum
Temperature	18°C maximum	16°C maximum	16°C maximum
pH	6.5 to 8.5 standard units	7 to 8.5 standard units	7 to 8.5 standard units
Turbidity	less than 5 NTU above background	less than 5 NTU above background	less than 5 NTU above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

Consideration of Surface Water Quality-Based Limits for Numeric Criteria

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which Ecology has determined to be AKART. Mixing zones are authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

Acute Mixing Zone -- the boundaries of the acute mixing zone are 21 feet in either the upstream or downstream direction from the outfall. The lateral boundary is 4.5 feet from the outfall.

Chronic Mixing Zone -- The boundaries of the chronic mixing zone are 208 feet in either the upstream or downstream direction from the outfall. The lateral boundary is 45 feet from the outfall.

As a part of the design evaluation for the new WWTP, Cosmopolitan Engineering Group evaluated effluent mixing with the receiving water. A field study obtained salinity and temperature data during a tidal cycle during summer flow conditions in the Naselle River. Using design flow rates, receiving water data, and the PLUMES3 computer model, the engineering firm evaluated mixing at the boundaries of the acute and chronic mixing zones according to the conditions in the *Permit Writer's Manual*. The critical condition for the Naselle River in the vicinity of the outfall occurs during late summer low flow conditions, and is also affected by salinity and temperature when fresh and marine water mix during tidal cycles. The ambient study

was done to obtain data for identifying dilution during the critical condition. Appendix A of the engineering report presents the results of the receiving water study and modeling.

The calculated dilution factors during the critical condition are: Acute 16 and Chronic 74.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as biochemical oxygen demand is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect. The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The impacts of dissolved oxygen deficiency, temperature, pH, fecal coliform bacteria, and ammonia were evaluated for compliance with the water quality standards. A discussion of each parameter follows:

BOD -- The impact of BOD on the receiving water was modeled using a dilution factor of 74 at critical condition and with the technology-based effluent limitation for BOD described under "Technology-Based Effluent Limitations." The calculations used to determine dissolved oxygen impacts are shown in Appendix C.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitation for BOD was placed in the permit.

Temperature--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 19°C and the effluent temperature is 18.5°C. The predicted resultant temperature at the boundary of the chronic mixing zone is 19°C.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit.

pH--Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the Water Quality Standards for Surface Waters.

Fecal coliform bacteria. Compliance with the water quality standard is evaluated by simple mixing analysis using the technology-based limit of 400 colonies per 100 mL and a dilution factor of 74.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals whenever there is a reasonable potential for those

chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

Because effluent data for toxic pollutants are not available, the permit writer could not perform reasonable potential analyses to evaluate the discharges compliance with the water quality standards for toxic pollutants. As an example of how water quality-based limitations are established in permits, the permit writer calculated potential effluent limitations for ammonia.

The determination of the reasonable potential for ammonia to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The parameters used in the critical condition modeling are as follows: acute dilution factor 16, chronic dilution factor 74, receiving water temperature 19°C, receiving water alkalinity 50 (as mg CaCO₃/L), and ambient ammonia concentration 0.04 mg/l. Even though no ammonia data exists, the calculated limits are much larger than the expected influent ammonia concentrations to the WWTP.

The draft permit requires DSHS to test for metal toxicants during the first year of the permit. When the data are available Ecology will perform the reasonable potential analyses.

Human Health

Based on municipal WWTP monitoring of similar sized facilities, Ecology has determined that the discharge probably does not contain chemicals of concern. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

Whole Effluent Toxicity

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore, this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. Ecology may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

Sediment Quality

Ecology has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that Ecology may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

FACT SHEET FOR NPDES PERMIT WA0023728

Ecology has determined, through a review of the discharger characteristics and effluent characteristics, that this discharge has no reasonable potential to violate the Sediment Management Standards.

MONITORING AND REPORTING

Effluent monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved. Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of the *Permit Writer's Manual* for activated sludge plants with a capacity of less than 0.5 MGD.

Additional monitoring is required in order to further characterize the effluent. These monitored pollutants could have a significant impact on the quality of the surface water.

OTHER PERMIT CONDITIONS

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S4. restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Condition S5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

FACT SHEET FOR NPDES PERMIT WA0023728

RESIDUAL SOLIDS HANDLING

To prevent water quality problems, the Permittee is required in permit Condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the Pacific County Health Department.

OUTFALL EVALUATION

Proposed permit Condition S9. requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffuser and to determine if sediment is accumulating in the vicinity of the outfall.

GENERAL CONDITIONS

General Conditions are based on state and federal law and regulations, and have been standardized for all individual NPDES permits issued by Ecology.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

Ecology may modify this permit to impose numerical limitations, if necessary, to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies. Ecology may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The permit writer proposes to issue this permit for five years.

REVIEW BY THE PERMITTEE

A proposed permit was reviewed by DSHS for verification of facts. Only factual items were corrected in the draft permit and fact sheet.

REFERENCES FOR TEXT AND APPENDICES

Cosmopolitan Engineering Group

1996. Outfall Mixing Zone Study for Naselle Youth Camp Wastewater Treatment Plant

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. U.S. EPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. U.S. EPA Office of Water, Washington, D.C.

Gibbs & Olson, Inc.

1996. Naselle Youth Camp -- General Sewer Plan/Engineering Report.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

APPENDICES

APPENDIX B -- GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs

BOD₅--Five day Biochemical Oxygen Demand is the quantity of oxygen utilized by a mixed population of microorganisms in an aerobic oxidation for 5 days at a controlled temperature of 20°C. BOD is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. Chlorine is an oxidizing agent that is toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Class 1 Inspection--A walk-through inspection of a facility that includes a visual inspection and some examination of facility records. It may also include a review of the facility's record of environmental compliance.

Class 2 Inspection--A walk-through inspection of a facility that includes the elements of a Class 1 Inspection plus sampling and testing of wastewaters. It may also include a review of the facility's record of environmental compliance.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. For fresh water this situation usually occurs when the flow within a water body is low, or for marine water when temperature and salinity conditions reduce effluent dilution.

Daily Maximum Discharge Limitation--The greatest allowable value for any calendar day.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of rainfall-caused surface water drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Mixing Zone--A volume of receiving water that surrounds an effluent discharge within which water quality criteria may be exceeded. The dimensions of the authorized mixing zone are specified in a facility's permit and follows procedures outlined in state regulations (chapter 173-201A WAC).

Monthly Average--The average of the measured values obtained over a calendar month's time.

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C -- TECHNICAL CALCULATIONS

CALCULATION OF WATER QUALITY-BASED EFFLUENT LIMITS

Water quality-based effluent limits are calculated by the two-value wasteload allocation process as described on page 100 of the TSD (EPA, 1991) and shown below.

1. Calculate the acute wasteload allocation WLA_a by multiplying the acute criteria by the acute dilution factor and subtracting the background factor. Calculate the chronic wasteload allocation (WLA_c) by multiplying the chronic criteria by the chronic dilution factor and subtracting the background factor.

$$WLA_a = (\text{acute criteria} \times \text{acute zone dilution factor}) - [\text{background concentration} \times (\text{acute zone dilution factor} - 1)]$$

$$WLA_c = (\text{chronic criteria} \times \text{chronic zone dilution factor}) - [\text{background concentration} \times (\text{chronic zone dilution factor} - 1)]$$

2. Calculate the long term averages (LTA_a and LTA_c) which will comply with the wasteload allocations WLA_a and WLA_c .

$$LTA_a = WLA_a \cdot e^{[0.5s^2 - zs]}$$

where:

$$s^2 = \ln[CV^2 + 1]$$

$$z = 2.326$$

CV = coefficient of variation = std. dev./mean

$$LTA_c = WLA_c \cdot e^{[0.5s^2 - zs]}$$

where:

$$s^2 = \ln[(CV^2 + 4) + 1]$$

$$z = 2.326$$

3. Use the smallest LTA of the LTA_a or LTA_c to calculate the maximum daily effluent limit and the monthly average effluent limit.

Maximum Daily Limit = MDL

$$MDL = LTA \cdot e^{(Z\sigma - 0.5\sigma^2)}$$

where:

$$s^2 = \ln[CV^2 + 1]$$

$$z = 2.326 \text{ (99th percentile occurrence}$$

probability)

LTA = Limiting long term average

Average Monthly Limit = AML

FACT SHEET FOR NPDES PERMIT WA0023728

$$AML = LTAx e^{(Z\sigma_n - 0.5\sigma_n^2)}$$

where:

$$s^2 = \ln[(CV^2, n) + 1]$$

n = number of samples/month

z = 1.645 (95th percentile occurrence probability)

LTA = Limiting long term average

FACT SHEET FOR NPDES PERMIT WA0023728

APPENDIX D--RESPONSE TO COMMENTS